

## ABSTRACT

A noninvasive process to determine cerebral blood flow velocity response to object and face recognition task by a human subject, including steps of obtaining a subject's cerebral blood flow velocity in cerebral arteries on both sides of the brain using a microcomputer integrated with a transcranial Doppler ultrasound instrument with two probes placed on the temples and sample volumes focused on cerebral vessels on both sides and calculating laterality index for both arteries. Simultaneously, testing the subject with object or face processing task presented in real-life or on the screen of a digital computer while monitoring the mean blood flow velocity during each stage of the task in real-time. Processing the acquired data to determine the spectrum analysis using a microcomputer that is operatively connected to a computer workstation for image retrieval and cross matching.